

2006 RESEARCH PROBLEM STATEMENT

Problem Title: Improved Performance of MSE Walls

No.: 06.07-5

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1. Briefly describe the problem to be addressed:

Several MSE wall installations on UDOT projects have not performed as intended. MSE walls are complicated systems where adverse performance of one of more components can lead to wall failures. In order to assess the risk of wall failure, a failure mode analysis will be conducted by USU. Based on the findings of this analysis, changes in design and construction procedures could reduce the risks associated with particular failure modes. This project will identify specific changes in design and construction procedures which will help UDOT reduce the risks associated with MSE wall failures.

Strategic Goal: ☐ Preservation ☐ Operation ☐ Capacity ☐ Safety (Check all that apply)

2. List the research objective(s) to be accomplished:

1. Develop recommendations for revised construction and design procedures which reduce risks associated with MSE wall failure modes.

3. List the major tasks required to accomplish the research objective(s):

Estimated person-hours

1. Participate in USU-initiated risk assessment panel.
2. Review results of risk assessment.
3. Correlate failure modes with elements of design and construction.
4. Conduct analytical study of wall performance in which existing design and construction procedures and proposed changes are modeled to validate and quantify the effects of the proposed changes.
5. Prepare final recommendations and report

Total estimated person hours: ~1,200 (student and faculty)

4. Outline the proposed schedule (when do you need this done, and how we will get there):

Ideally, this work would be accomplished within the six months following completion of the risk assessment.

5. Indicate type of research and / or development project this is:

Large: ☐ Research Project ☐ Development Project
Small: ☒ Research Evaluation ☐ Experimental Feature ☐ New Product Evaluation ☐ Tech Transfer Initiative :
☐ Other _____

6. What type of entity is best suited to perform this project (University, Consultant, UDOT Staff, Other Agency, Other)?

University researcher with consultant experience, together with supervision and oversight by UDOT staff as part of technical advisory committee.

7. What deliverable(s) would you like to receive at the end of the project? (e.g. useable technical product, design method, technique, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tool, etc.)
Report containing recommendations for design procedures and specifications.

8. Describe how will this project be implemented at UDOT.

Structures Geotechnical Section and Structures Design Section will use recommendations for the design and review of MSE wall installations. Recommendations can be incorporated in specifications and design guidance documents (e.g., manual of instruction).

9. Describe how UDOT will benefit from the implementation of this project, and who the beneficiaries will be.

UDOT will benefit from improved performance and reliability of MSE walls. Also, delays and reconstruction costs which have occurred when existing MSE walls have performed adversely will be avoided.

10. Describe the expected risks, obstacles, and strategies to overcome these.

The scope of potential changes and analysis is dependent upon the outcome of the risk assessment. Not all potential changes will be addressed.

11. List the key UDOT Champion of this project (UDOT employee who will help Research Division steer and lead this project, and will spearhead the implementation of the results): Darin Sjoblom

12. Estimate the cost of this research study including implementation effort (use person-hours from No. 3): \$25,000

13. List other champions (UDOT and non-UDOT) who are interested in and willing to participate in the Technical Advisory Committee for this study:

Name	Organization/Division/Region	Phone
A) Jim Higbee	UDOT – Structures, Geotechnical Section	
B) Michael Fazio	UDOT – Structures, Hydraulics Section	
C)		
D)		
E)		
F)		

14. Identify other Utah agencies, regional or national agencies, or other groups that may have an interest in supporting this study: FHWA